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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/549,411

12/21/2005

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EXAMINER

YANG, JIE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

12/23/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/549,411	Applicant(s) NAKAMURA ET AL.	
	Examiner JIE YANG	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14, 16, 17, 19-22, 24-47 and 49 is/are pending in the application.
- 4a) Of the above claim(s) 5-12, 14, 16, 17, 19-22, 30, 40-47 and 49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-4, 24-29 and 31-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/25/07; 9/12/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of "Group I—Claims, Specie (1): 1-4, 24, 27-29, and 31-39 drawn to a using a non-low deformation resistance region forming means" in the reply filed on 9/15/2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP 818.03(a)).

Claims 13, 15, 18, 23, 48, and 50-85 have been cancelled; the specification and claims 5-7, 10-12, 14, 16-17, 19, 25, 26, 30, 40, 41, 46, and 47 have been amended. After amendment, claims 25-26 depend on claim 24 and belong to Group I specie (1); while the other claims still belong to different individual species (refer to the previous "requirement for restriction/election" marked 9/15/2008). Therefore, claims 5-12, 14, 16, 17, 19-22, 30, 40-47, and 49 are withdrawn from consideration as being directed to a non-elected group and claims 1-4, 24-29, and 31-39 are pending for examination.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 24-26, 31-36, 38, and 39 are rejected under 35 U.S.C. 102(b) as anticipated by Nakamura (JP 2001-321825 with machine English translation, thereafter JP'825).

Regarding claims 1-3, JP'825 teaches a working method by which large strain is added and average grain size is micronized by applying large shear deformation to a metallic material and only a part to which the shear deformation is applied is heated (Abstract, Fig.1-5 of JP'825), which reads on the limitations of locally shearing low deformation resistance region for finer grain structure and forming non-low deformation resistance region along the low deformation resistance region as recited in the instant claims 1-2. JP'825 teaches guiding and rolling forging the metallic material before and after locally shearing operation (Fig.1-5, paragraphs [0028]-[0031] of JP'825), which reads on the non-low deformation resistance region is formed along at least one side periphery of the low deformation resistance region as recited in the instant claims 2 and 3.

Regarding claim 4, JP'825 teaches cooling for the not heating part of metallic mold (paragraphs [0022]-[0025] of JP'825), which reads on the cooling means as recited in the instant claim.

Regarding claims 24-26, JP'825 teaches cooling the non-shearing part to the temperature below to the softening temperature (Paragraph [0022] of JP'825) and the grain size of after locally shearing operation is about 3 micron (Table 2 of

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JP'825), which read on the plastic forming without coarser grain structure as recited in the instant claims.

Regarding claims 31, JP'825 teaches shearing extruding method (It is called ECAP method) with metallic mold having channel structures (Fig. 1-5, paragraphs [0028], and claims 2, 12 of JP'825), which reads on cylindrical body having hollow portion in a high pressure state as recited in the instant claim.

Regarding claims 32-36, JP'825 teaches: shearing deformation with locally heating and cooling (Abstract, Fig.1-5, and paragraphs [0022]-[0025] of JP'825) and JP'825 further teaches guiding and rolling forging the metallic material before and after locally shearing operation (Fig.1-5, paragraphs [0028]-[0031] of JP'825), which read on the limitations of guiding and forming (claims 32, 35); heating (claim 33); cooling (claim 34); and locally heating and shearing (claim 36).

Regarding claim 38 and 39, JP'825 teaches the combination of two or more shearing extruding connected for mass production (Fig.5, paragraph [0029]), which reads on the limitation of one way or both-way rotation and a rotary axis which arranged substantially parallel to the extending direction of the metal body as recited in the instant claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'825 in view of Ozawa (US 6,742,374 B2, thereafter, US'374).

Regarding claims 27-29, JP'825 does not specify carburizing treating the metal body (claim 27); stretching the low deformation resistance region (Claim 28); or compressing the low deformation resistance region (Claim 29). However, all these techniques are conventional in the art. This position is evidenced by US'374. US'374 teaches a method of partly reinforcing a workpiece (Abstract of US'374). US'374 teaches the reinforcement-requiring part of the workpiece that has been heated up to a high temperature upon contacting with the forming surface of the forming die makes it possible to partly reinforce the reinforcement-requiring part (Col.5, lines 11-30 of US'374). It is well-known the forming operation includes stretching and compressing functions as recited in the instant claims 28 and 29, respectively. US'374 further teaches the heating can be

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performed in different gas atmospheres, for example, in carbon-included gas such as CO gas atmosphere (Example 1 of US'374), which would result in the carburization as recited in the instant claim 27. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the conventional techniques, such like carburizing (claim 27), stretching the low deformation resistance region (Claim 28); or compressing the low deformation resistance region (Claim 29) in the process of JP'825 as demonstrated by US'374 in order to obtain desired reinforcement on the reinforcement-requiring part of the workpiece (Abstract and Col.5, lines 11-30 of US'374).

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'825 in view of McMaster (US 3,534,574, thereafter, US'574).

Regarding claim 37, JP'825 does not specify a vibratory motion for the forming. However, the vibratory motion for the forming is a conventional technique in the art. This position is evidenced by US'574. US'574 teaches a method of locally reducing a deformation resistance of a metal body by heating and vibration (Col.4, lines 35-41 of US'574) in order to form a low deformation resistance region that is subjected to shear by the

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rollers. US'574 further teaches that by controlling a vibration input a heated zone (low deformation region) can be moved in direction along the metal body (Col.5, lines 20-35 of US'574). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the conventional technique of the vibratory motion for the forming in the process of JP'825 as demonstrated by US'574 in order to improve the mechanical properties of the workpiece (Col.4, lines 35-41 of US'574)

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-4, 24-29, and 31-39 are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-20 of copending application No. 12/002951.

Although the conflicting claims are not identical, they are not patentable distinct from each other because the claims 1-20 of copending application No. 12/002951 teach the similar method of working a metal by locally heating to form the low deformation resistance region as disclosed in the instant claims. Thus, no patentable distinction was found in the instant claims compared with claims 1-20 of copending application No. 12/002951.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-4, 24-29, and 31-39 are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-35 of copending application No. 10/529807.

Although the conflicting claims are not identical, they are not patentable distinct from each other because the claims 1-35

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of copending application No. 10/529807 teach the similar method of working a metal, wherein a low deformation resistance region, which deformation resistance is locally reduced, is formed in a metal body, and the low deformation resistance region is subjected to shear deformation thereby to fine the microstructure of the metal body as disclosed in the instant claims. Thus, no patentable distinction was found in the instant claims compared with claims 1-35 of copending application No. 10/529807.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/

Supervisory Patent Examiner, Art Unit 1793